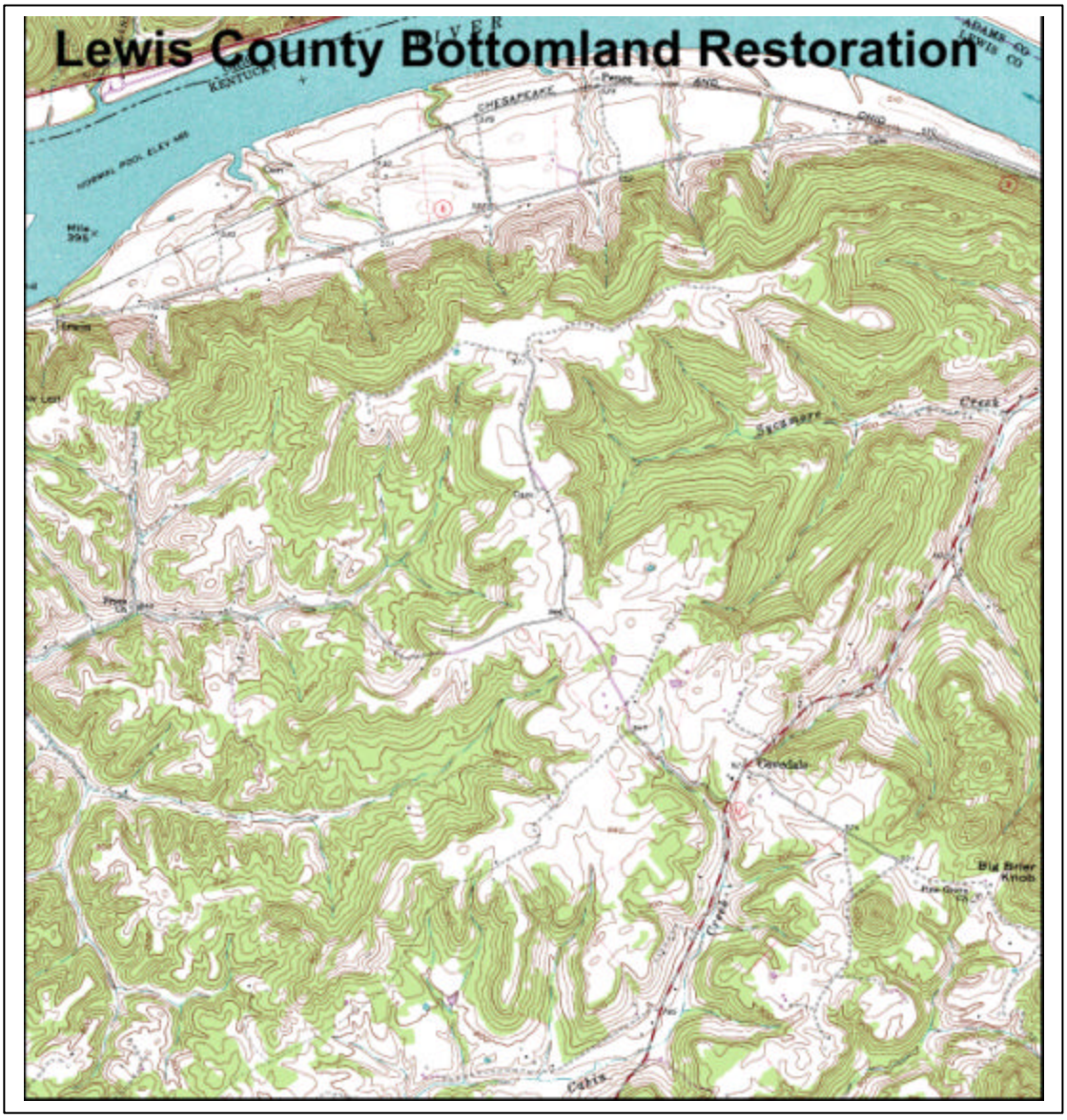
## Lewis County Bottomland Restoration (KY-31)

### 1.0 Location

The proposed Lewis County Bottomland Restoration project area is located in Lewis County, Kentucky. The project area is located northeast of the town of Covedale, Kentucky. The project area is located between Ohio River miles 391-396. The project site is within the jurisdiction of the Huntington District, U.S. Army Corps of Engineers (USACE).




### 2.0 Project Goal

The primary goal of the Lewis County project is the acquisition, restoration, and reforestation of approximately 400 acres of bottomland hardwoods and the restoration of a riparian corridor along the Ohio River. Another goal for the Lewis County project addresses the restoration of upland forest habitat within the project area. Long term restoration efforts will include reforestation of bottomland hardwoods, development of seasonally flooded impoundments, and the restoration of natural systems throughout the floodplain.

## 3.0 Project Description and Rationale

The Lewis County Bottomland Restoration project area consists of approximately 2600 acres of upland habitat and 400 acres of Ohio River bottomland habitat in Lewis County, Kentucky.

The bottomland portion of the project area is the first priority for acquisition, followed by the upland area. All project lands will be acquired from willing sellers.

A portion of the floodplain area will be reforested with a mixture of mast producing bottomland hardwood trees, and the entire area will be managed to provide habitat diversity for game and non-game wildlife. A portion of the project area will be maintained as open habitat such as warm season grasslands, food plots, or other wildlife openings. Future development would include the construction/development of moist soil units and/or other wetlands.

## 4.0 Existing Conditions

**Terrestrial/Riparian Habitat:** Approximately 2,600 acres of the site is upland habitat. This upland area is dominated by old fields, pasture and hayfields, reforested pine communities, mixed upland hardwood draws, and agricultural fields. The primary crops grown on the site are tobacco, corn, and soybeans.

The floodplain area is primarily agricultural with a mixture of pasture, hayfield, and row crops. A narrow band of riparian vegetation exists along a low terrace of the Ohio River floodplain.

**Aquatic Habitats:** The watershed for the upland area is drained by several small creeks that meander through the site and empty into the Ohio River. The Ohio River borders the northern edge of the site between river miles 391-395. Some small ponds and embayments exist on the bottomland area adjacent to the Ohio River.

**Wetlands:** Most of the jurisdictional wetlands in the project area are associated with the bottomland hardwoods in the riparian zone adjacent to the Ohio River. In addition, there may be a few isolated wetlands within the project area, especially adjacent to the interior drainage ways. There are no significant or unique wetlands within the project area.

**Federally-Listed Threatened and Endangered Species:** According to the U.S. Fish and Wildlife Service (USFWS), there are 9 federally-listed endangered species and 1 federally-listed threatened species known to occur in Lewis County, Kentucky. These species are listed on Table 1.

The riparian corridor adjacent to the Ohio River may provide summer roost habitat for the Indiana bat. Preferred tree species would include a mixture of oaks (*Quercus* spp.), silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), and shagbark hickory (*Carya ovata*) (INHS, 1996). The riparian corridor would also provide feeding/foraging habitat for the Indiana bat.

All of the mussels are freshwater species that typically inhabit medium to large river systems. The mussels are typically found in habitats with substrates that range from silt to gravel, and in water depths from 0.5 to 8.0 meters. These species are generally associated with moderate to fast flowing water. There does not appear to be suitable habitat for these species in the immediate vicinity of the project area.

Virginia spiraea occurs in rocky, flood scoured riverbanks in gorges and canyons. There does not appear to be suitable habitat for this species in the project area.

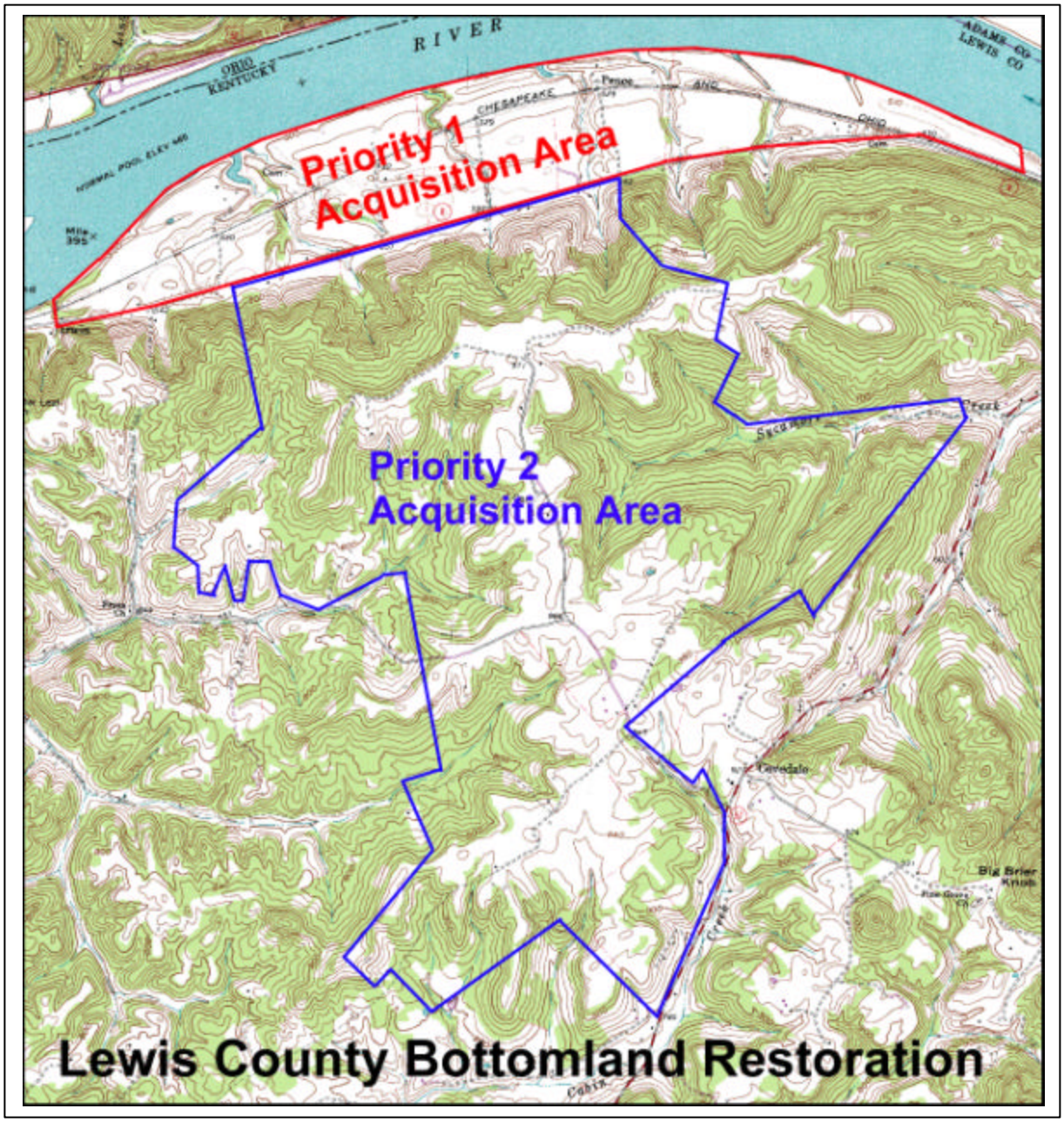
According to the USFWS, it is believed that the eastern cougar has been extirpated from Kentucky. Much of the cougar's habitat has been eliminated through deforestation and development. The primary habitat needs for the cougar are large wilderness areas and adequate food sources. Due to lack of suitable habitat, it is highly unlikely that this species exists near the project area.

**Table 1. Federally-listed species known to occur in Lewis County, Kentucky.**

| Common Name | Scientific Name | Federal Status | Potential Habitat Present |
|---|---|---|---|
| eastern cougar | *Felis concolor couguar* | Endangered | No |
| Indiana bat | *Myotis sodalis* | Endangered | Yes |
| rough pigtoe mussel | *Pleurobema plenum* | Endangered | No |
| orange-foot pimpleback pearly mussel | *Plethobasus cooperianus* | Endangered | No |
| eastern fanshell pearly mussel | *Cyprogenia stegaria* | Endangered | No |
| tubercled blossom mussel | *Epioblasma torulosa torulosa* | Endangered | No |
| pink mucket pearly mussel | *Lampsilis abrupta* | Endangered | No |
| ring pink mussel | *Obovaria retusa* | Endangered | No |
| purple cat's paw pearly mussel | *Epioblasma obliquata obliquata* | Endangered | No |
| Virginia spiraea | *Spiraea virginiana* | Threatened | No |

*Source: U.S. Fish and Wildlife Service, 1999*

## 5.0 Project Diagram




## 6.0 Land Acquisition and Reforestation Strategy

Land acquisition for the Lewis County Bottomland Restoration project area will be completed in a two-phase approach that assigns a hierarchy for land purchases. Although the goal is to purchase any lands from willing sellers within the project area, the acquisition areas will be assigned two levels of priority.

**Priority 1 Area:** The lands that lie between State Route 8 and the Ohio River, as shown in the red border on the project diagram, would be considered the first priority for purchase since this

area includes floodplain land. There are approximately 400 acres within the Priority 1 Acquisition Area (see Project Diagram in section 5.0).

The Priority 1 area contains all of the Ohio River floodplain habitat for the Lewis County Bottomland Restoration project. Approximately 250 acres would be reforested in the Priority 1 area. Soil types, hydrology, exposure, and terrain position would be the primary factors considered when selecting the tree species to be planted, and a detailed planting design should be developed in order to insure that the planting effort is successful. Typical species to be planted in the bottom/floodplain area would include pin oak (*Quercus palustris*), swamp chestnut oak (*Quercus michauxii*), swamp white oak (*Quercus bicolor*), pecan (*Carya illinoensis*), and shagbark hickory (*Carya ovata*). Aggressive light mast producing species, such as silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), and/or black willow (*Salix nigra*), would be expected to regenerate naturally.

**Priority 2 Area:** The lands that lie south of State Route 8 and to the west of State Route 57 would be considered the second priority for acquisition. There are approximately 2600 acres within the Priority 2 Acquisition Area (see Project Diagram in section 5.0).

The Priority 2 area is predominantly upland habitat. Portions of the upland areas that are currently in pasture and agricultural production would be reforested with a variety of native mast producing hardwood species. There are currently some pine plantings on the upland area. Approximately 300 acres of the Priority 2 area would be reforested. Typical species would include white oak (*Quercus alba*), post oak (*Quercus stellata*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), pin oak (*Quercus palustris*), mockernut hickory (*Carya tomentosa*), shagbark hickory (*Carya ovata*), and pecan (*Carya illinoensis*). Light mast producing species would be expected to repopulate the area naturally.

Open areas that are not reforested will be maintained in order to provide habitat diversity. These open areas may be maintained by mowing, burning, and/or tilling. Depending upon the type of wildlife management prescribed in the project management plan, other opening such as foodplots may be desirable.

## 7.0 Cost Estimate (Land Acquisition and Reforestation)

**Reforestation -** Engineering costs for the proposed project are contained on Table 1. A detailed MCACES cost estimate for the proposed project is included in Appendix D.

**Table 2. Project Costs.**

| Item | Cost |
|---|---|
| Prepare Project Management Plan | $25,000 |
| Priority 1 Land Acquisition (400 acres) | |
| Reforestation on Priority 1 Area (250 acres) | $54,800 |
| Priority 2 Land Acquisition (2600 acres) | |
| Reforestation on Priority 2 Area (300 acres) | $65,800 |
| Mobilization for Reforestation @ 12.5% | $15,100 |
| **TOTAL** | |

## 8.0 Schedule

**Land Acquisition:** The estimated acquisition and development time for this project is shown on Table 3.

| Table 3. Acquisition and Development Schedule. | |
|---|---|
| **Item** | **Time** |
| Project Management Plan | 1 year |
| Priority 1 Acquisition | 1-5 years |
| Priority 1 Reforestation and Development | 1-8 years |
| Priority 2 Acquisition | 1-15 years |
| Priority 2 Reforestation and Development | 1-20 years |
| **TOTAL** | **20 years** |

## 9.0 Expected Ecological Benefits

**Terrestrial/Riparian Habitat:** Habitat restoration on the Lewis County project area would result in long term beneficial impacts to terrestrial and riparian resources. The restoration of the existing riparian corridor along the Ohio River would be considered a long-term beneficial impact to terrestrial/riparian resources. The reforestation, and management of the floodplain/riparian area would be beneficial to many game and nongame species of wildlife.

The reforestation, preservation, and management of bottomland and upland areas would benefit many species of wildlife. Reforestation would reduce overall forest fragmentation on the area and provide habitat for many species. Likely species to be beneficially affected would include: resident bird species, such as northern bobwhite and turkey; neotropical migratory birds, such as warblers, vireos, and sparrows; and raptors, such as red-tailed hawk, northern harrier, sharp-shinned hawk, and barred owl. Resident mammals, such as white-tailed deer, eastern cottontail, and eastern gray squirrel; and resident reptiles and amphibians would also benefit from the proposed project. In addition, important long-term beneficial impacts to migratory waterfowl, especially wood ducks and mallards would be anticipated.

Management of upland areas on the project site would also allow managers to implement watershed management strategies. Strategies such as reforestation of agricultural lands in the upland areas would reduce erosion and runoff entering the watershed.

**Aquatic Habitats:** Seasonally flooded habitats that are created on the project area will provide refuge, nursery, and foraging habitat for a number of riverine fish species. Reforestation of bottomland areas would reduce runoff rates and decrease the sediment loads entering the watershed. Long-term beneficial impacts to aquatic resources would be anticipated as a result of implementing the proposed project. The preservation and reforestation of the wooded riparian corridor along the Ohio River shoreline would reduce potential streambank erosion. The conversion of agricultural land to forest would indirectly improve water quality by reducing the amount of silt and contaminants from entering the Ohio River via stormwater runoff

**Wetlands:** Restoration and creation of bottomland hardwood wetlands, moist-soil units, and other seasonally flooded habitats would add to the amount of wetlands present on the project area. The benefits of these newly created/restored wetlands would include improved water quality, floodflow retention/reduction, groundwater recharge, and provide habitat for waterfowl and other wetland dependent species.

**Federally-Listed Threatened and Endangered Species:** Implementation of the proposed project would potentially create habitat for the Indiana bat in the long term. Reforestation would

provide potential summer roost habitat for Indiana bats. Bottomland hardwood restoration, reforestation, protection, and long-term management would benefit endangered Indiana bats by providing summer roost and foraging habitat on the project area. Control of bank erosion would reduce sedimentation inputs into the river and potentially reduce impacts to endangered mussel species downstream of the project area.

**Socioeconomic Resources:** There would be long-term beneficial impacts to socioeconomic resources as a result of implementing the proposed project. Long-term socioeconomic benefits would be realized through improved recreational opportunities for hunting, fishing, wildlife observation, and other non-consumptive uses. Local businesses would receive indirect benefits from local expenditures associated with outdoor recreation purchases, such as hunting gear, fishing supplies, gas, food, and other needs.

## 10.0 Potential Adverse Environmental Impacts

**Terrestrial/Riparian Habitat:** There would be no reasonably foreseeable adverse impacts to terrestrial or riparian resources as a result of implementing the proposed project.

**Aquatic Habitats:** There would be no reasonably foreseeable adverse impacts to aquatic resources as a result of implementing the proposed project.

**Wetlands:** There would be no reasonably foreseeable adverse impacts to jurisdictional wetlands as a result of implementing the proposed project.

**Federally-Listed Threatened and Endangered Species:** There would be no reasonably foreseeable adverse impacts to federally-listed threatened or endangered species as a result of implementing the proposed project.

**Socioeconomic Resources:** There would be long-term direct adverse socioeconomic impacts to local farmers as a result of implementing the proposed project. There would be indirect long-term adverse impacts to local businesses that support the agricultural community.

## 11.0 Mitigation

No mitigation would be necessary to implement this project.

## 12.0 Preliminary Operation and Maintenance Costs:

The operation and maintenance costs associated with the Lewis County Bottomland Restoration project would be correlated to the amount of active management on the area. Labor would be the primary cost associated with the long-term management of the Lewis County area.

## 13.0 Potential Cost Share Sponsor(s)

- Kentucky Department of Fish and Wildlife Resources
- Kentucky Division of Forestry
- Kentucky Land Heritage Trust
- North American Conservation Plan
- The Nature Conservancy

- Ducks Unlimited
- Partners In Flight
- Mellon Foundation

## 14.0 Expected Life of the Project

It is anticipated that the Lewis County Bottomland Restoration project area will be managed for natural resources by the Ohio DNR in perpetuity.

## 15.0 Hazardous, Toxic, and Radiological Waste Considerations

Potential impacts of hazardous, toxic, and radiological waste (HTRW) at the site were visually assessed during a site visit and further assessed via a database search of HTRW records in the site area.

### Site Inspection Findings

The project area comprises a large area of bottomland extending for about 3.5 miles along the south shoreline of the Ohio River between river miles 391.5 to 395.3. The bottomland protrudes inland (south) for about 3.5 miles. The area is located in Lewis County, Kentucky. The small towns of Pence and Irwin, Kentucky are respectively located on the east and west sides of that portion of the bottomland found on the south shore of the Ohio River.

The following environmental conditions were considered when conducting the July 13, 1999 project area inspection:

- Suspicious/Unusual Odors;
- Discolored Soil;
- Distressed Vegetation;
- Dirt/Debris Mounds;
- Ground Depressions;
- Oil Staining;
- Above Ground Storage Tanks (ASTs);
- Underground Storage Tanks (USTs);
- Landfills/Wastepiles;
- Impoundments/Lagoons;
- Drum/Container Storage;
- Electrical Transformers;
- Standpipes/Vent pipes;
- Surface Water Discharges;
- Power or Pipelines;
- Mining/Logging; and
- Other.

A mixture of wetlands, agricultural lands consisting of pastures and row crops, and upland forests are in the project area. None of the environmental conditions listed above were observed in the project area.

### Risk Management Data Search

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The search complied with ASTM Standard Practice for Environmental Site Assessments, E 1527-97. This search report is presented in Appendix B. Included in Appendix B is a map outlining the boundary of the database search. As shown on the map, the area searched for HTRW conditions included the project area and a parimeter extending one mile beyond the project boundary. Databases searched (e.g., USTs, NPL sites, etc.) are as follows:

| **Databases Searched:** |
|---|
| 1. **NPL:** National Priority List |
| 2. **Delisted NPL:** Contaminated sites removed from the NPL. |
| 3. **RCRIS-TSD:** Resource Conservation and Recovery Information System |
| 4. **SHWS:** State Hazardous Waste Sites |
| 5. **CERCLIS:** Comprehensive Environmental Response, Compensation, and Liability Information System |
| 6. **CERC-NFRAP:** Comprehensive Environmental Response, Compensation, and Liability Information System |
| 7. **CORRACTS:** Corrective Action Report |
| 8. **SWF/LF:** Available Disposal for Solid Waste in Illinois- Solid Waste Landfills Subject to State Surcharge |
| 9. **LUST:** Leaking Underground Storage Tank |
| 10. **UST:** Underground Storage Tank |
| 11. **RAATS:** RCRA Administrative Tracking System |
| **12. RCRIS-SQG:** Resource Conservation and Recovery Information System for Small Quantity Generators |
| 13. **RCRIS-LQG:** Resource Conservation and Recovery Information System for Large Quantity Generators |
| 14. **HMIRS:** Hazardous Materials Reporting System |
| 15. **PADS:** PCB Activity Database System |
| 16. **ERNS:** Emergency Response Notification System |
| 17. **FINDS:** Facility Index System/Facility Identification Initiative program Summary Report |
| 18. **TRIS:** Toxic Chemical Release Inventory System |
| 19. **NPL Lien:** NPL Liens |
| 20. **TSCA:** Toxic Substances Control Act |
| 21. **MLTS:** Material Licensing Tracking System |
| 22. **ROD:** Record of Decision |
| 23. **CONSENT:** Superfund (CERCLA) Consent Decrees |
| 24. **MINES:** Mines Master Index File |

The HTRW database search did not identify any of the above environmental conditions in the project area.

**HTRW Findings and Conclusions**

An Inspection of the project site and a search of environmental records relevant to the project site, and extended areas beyond, have revealed no evidence of recognized environmental conditions in connection with this project site.

## 16.0 References

| **References:** | |
|---|---|
| USFWS, 1999 | U.S. Fish and Wildlife Service, July 8, 1998. Federally Endangered, Threatened and Proposed Species, Kentucky. |

## APPENDIX A Threatened & Endangered Species

## APPENDIX B Hazardous Toxic and Radiological Wastes

## APPENDIX C Plan Formulation and Incremental Analysis Checklist

**Project Site Location:** The proposed Lewis County Bottomland Restoration project area is located in Lewis County, Kentucky. The project area is located northeast of the town of Covedale, Kentucky. The project area is located between Ohio River miles 391-396. The project site is within the jurisdiction of the Huntington District, U.S. Army Corps of Engineers (USACE).

**Description of Plan Selected:** The primary goal of the Lewis County project is the acquisition, restoration, and reforestation of approximately 400 acres of bottomland hardwoods, including seasonally flooded sloughs and a riparian corridor along the Ohio River. Another goal for the Lewis County project addresses the restoration of upland forest habitat within the project area. Long term restoration efforts will include reforestation of bottomland hardwoods, development of seasonally flooded impoundments, and the restoration of natural systems throughout the floodplain.

**Alternatives of the Selected Plan:**

Smaller Size Plans Possible? Yes and description

Reduce the amount of land to be restored.

Larger Size Plan Possible? Yes and description

Increase the size and number of seasonally flooded areas.

Other alternatives? No

**Restore/Enhance/Protect Terrestrial Habitats?** Yes **Objective numbers met** T1, T3

**Restore, Enhance, & Protect Wetlands?** Yes **Objective numbers met** W1, W4

**Restore/Enhance/Protect Aquatic Habitats?** Yes **Objective numbers met** A8

**Type species benefited:** Resident and migratory wildlife, including terrestrial and avian species, fish and invertebrates including mussels.

**Endangered species benefited:** Potential benefits to Indiana bats and endangered mussels.

**Can estimated amount of habitat units be determined:**

**Plan acceptable to Resources Agencies?**
**U.S. Fish & Wildlife Service?**
**State Department of Natural Resources?** Yes – Kentucky Department of Fish and Wildlife

**Plan considered complete?** Yes **Connected to other plans for restoration?**

**Real Estate owned by State Agency?** No **Federal Agency?** No
**Real Estate privately owned?** Yes
**If privately owned, what is status of future acquisition**? Acquisition would be required from willing sellers.

**Does this plan contribute significantly to the ecosystem structure or function requiring restoration? What goal or values does it meet in the Ecosystem Restoration Plan?**

Yes The plan provides additional habitat and habitat diversity for several terrestrial, wetland, and aquatic species.

**Is this restoration plan a part of restoration projects planned by other agencies? (i.e. North American Waterfowl Management Plan, etc.)**

Unknown

**In agencies opinion is the plan the most cost effective plan that can be implemented at this location?**

**Can this plan be implemented more cost effectively by another agency or institution?**
**Yes / No**
**Who:**

**From an incremental cost basis are there any features in this plan that would make the project more expensive than a typical project of the same nature? For embayment type plans is there excessive haul distance to disposal site? More expensive type disposal? Spoil that requires special handling/disposal?**

**Potential Project Sponsor:**

**Government Entity**:_____
**Non-government Entity** _____

Corps Contractor _____Date_____

U.S. Fish & Wildlife Representative _____Date_____

State Agency Representative _____Date _____

U.S. Army Corps of Engineers Representative _____Date _____

## Terrestrial Habitat Objectives

T1 Riparian Corridors

T2 Islands

T3 Floodplains

T4 Other unique habitats (canebrakes, river bluffs, etc.)

## Wetland Habitat Objectives

W1 Forested Wetlands: Bottomland Hardwoods

W2 Forested Wetlands: Cypress/Tupelo Swamps and other unique forested wetlands

W3 Scrub/Shrub Emergent Wetlands: isolated from the river except during high water and contiguous (includes scrub/shrub wetlands in embayments and island sloughs)

W4 Herbaceous Emergent Wetlands: Managed moist-soil impoundments

## Aquatic Habitat Objectives

A1 Backwaters (sloughs, embayments, oxbows, bayous, etc.)

A2 Riverine submerged and aquatic vegetation

A3 Sand and gravel bars

A4 Riffles/Runs (tailwater)

A5 Pools (deep water, slow velocity, soft substrate)

A6 Side Channel/Back Channel Habitat

A7 Fish Passage

A8 Riparian Enhancement/Protection

## APPENDIX D Micro Computer-Aided Cost Engineering System (MCACES)